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HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
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PATENT APPLICATION

ATTORNEY DOCKET NO. 200315934-1

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Winthrop D. Childers et al.

Confirmation No.: 2745

Application No.: 10/817,012

Examiner: SHEPARD, Justin E.

Filing Date: April 1, 2004

Group Art Unit: 2623

Title: Method and System for Displaying an Image in Three Dimensions

Mail Stop Appeal Brief-Patents
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Transmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on April 30, 2008.

☐ The fee for filing this Appeal Brief is $510.00 (37 CFR 41.20).

☒ No Additional Fee Required.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

☐ (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d)) for the total number of months checked below:

☐ 1st Month $120	☐ 2nd Month $460	☐ 3rd Month $1050	☐ 4th Month $1640

☐ The extension fee has already been filed in this application.

☒ (b) Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account 08-2025 the sum of $ 00 . At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees.

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Typed Name: Rebecca R. Schow
Signature:

Respectfully submitted,
Winthrop D. Childers et al.
By

Steven L. Nichols
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Rev 10/07(ApiBrief)

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Winthrop D. Childers et al.

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APPEAL BRIEF

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Alexandria, VA 22313-1450

Sir:

This Appeal Brief is in response to a non-final Office Action dated January 30, 2008 (the "Action" or "latest Office Action"), in which the Examiner reopened prosecution following Appellant's earlier Brief of April 26, 2007. Appellant has reviewed the new grounds of rejection in the Action of January 30, 2008 and finds them to be without merit. Consequently, in response to the Office Action of January 30, 2008, Appellant hereby requests reinstatement of its previous appeal. As required for reinstatement of the appeal, this Appeal Brief is accompanied by a Notice of Appeal and contains each of the topics required by Rule 41.37.

I. Real Party in Interest

The real party in interest is Hewlett-Packard Development Company, LP, a limited partnership established under the laws of the State of Texas and having a principal place of business at 20555 S.H. 249 Houston, TX 77070, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned affiliate of Hewlett-Packard Company, a Delaware Corporation, headquartered in Palo Alto, CA. The general or managing partner of HPDC is HPQ Holdings, LLC.

II. Related Appeals and Interferences

There are no appeals or interferences related to the present application of which the Appellants are aware.

III. Status of Claims

Claims 59 and 60 have been withdrawn from consideration pursuant to a Restriction Requirement. Thus, claims 1-58 and 61-67 are currently pending.

These claims have been more than twice rejected. Consequently, Appellant hereby appeals from the latest rejection of claims 1-58 and 61-67, hoping this time to bring the matter before the Board of Patent Appeals and Interferences.

All the pending claims are presented in the Appendix.

IV. Status of Amendments

Appellant has not filed any amendments subsequent to the final Office Action of November 24, 2006 or the latest Office Action of January 30, 2008

V. Summary of Claimed Subject Matter

Projection systems are becoming increasingly common-place in the home theatre venue and are often used to display movies and computer images. Projection systems are also popular among video game enthusiasts because of their rich and vibrant display capabilities. It is often desirable for a projector system to produce stereoscopic or three dimensional (3D) images such as 3D movies and 3D video games. Typically, the projection of 3D images requires two separate image projectors, one dedicated to projecting left eye images, and the other dedicated to projecting right eye images. The left and right images are displayed in spatially offset positions on a suitable viewing surface. The left and right images each carry different perspectives. By viewing the images through glasses configured to allow the left image to be perceived by only the left eye and the right image to be perceived by only the right eye, a viewer is able to see a single composite 3D image. (Appellant's specification, paragraphs 0002-3).

Appellant's application discloses a method and system for displaying an image frame in 3D or in 2D with a single light engine. The light engine is configured to operate in either a 3D mode of operation or in a 2D mode of operation. The mode of operation may be selected by a user of the light engine, for example. The light engine may comprise a spatial light modulator and an image processing unit configured to control the operation of the spatial light modulator. In one exemplary embodiment, if the light engine is operating in a 3D mode of operation, the image processing unit may generate left and right image sub-frame data, which is used by the spatial light modulator to generate left and right image sub-frames. The left and right image sub-frames may then be displayed on a viewing surface each carrying different perspectives during a single frame period such that a 3D image is perceived by a viewer wearing special 3D glasses. The left image sub-frame may include a first group of

colors (such as a first set of primary colors) and the right image sub-frame may include a second group of colors (such as a second set of primary colors) distinct from the first group of colors. In another exemplary embodiment, if the light engine is operating in a 2D mode of operation, the image processing unit may generate 2D image frame data, which is used by the spatial light modulator to generate a 2D image frame. The 2D image frame may then be displayed on the viewing surface during the single frame period such that a 2D image is perceived by a viewer. The 2D image frame may include some or all of the colors in the first and second groups of colors. (Appellant's specification, paragraphs 0019-20).

In one exemplary embodiment, each of the left and right sub-frames includes at least a nearly complete set of color primaries. By way of an illustrative embodiment for the following examples the left image sub-frame includes a first set of color primaries including red, green, and blue and the right image sub-frame includes a second set of color primaries including cyan, yellow, and magenta. (Appellant's specification, paragraphs 0040).

As shown in Fig. 1, image data is input into an image processing unit (106). The image data defines an image that is to be displayed by the display system (100). The image processing unit (106) performs various functions including controlling the illumination of a light source (101) and controlling a spatial light modulator (SLM) (103). The light source (101) may provide a beam of light to a color device (102). The color device (102) enables the display system (100) to display a color image. The color device (102) may be, but is not limited to, a sequential color device or scrolling color device, for example. Alternatively, the color device (102) may be a "parallel" color device such as an arrangement of dichroic mirrors that split light into primary colored light, such as red, green, and blue light. An alternate embodiment does not include a color device (102). (Appellant's specification, paragraphs 0023-4).

Light transmitted by the color device (102) may be focused onto the SLM (103) through a lens or through some other device (not shown). An SLM is a device that modulates incident light in a spatial pattern corresponding to an electrical or optical input. The terms "SLM" and "modulator" will be used interchangeably herein to refer to a spatial light modulator. The incident light may be modulated in its phase, intensity, polarization, direction, wavelength, color, hue, or any other property inherent to light by the modulator (103). Thus, the SLM (103) of Fig. 1 modulates the light output by the color device (102) based on input from the image processing unit (106) to form an image bearing beam of light that is eventually projected by display optics (104) onto a viewing surface (105) such as a screen. The display optics (104) may be for, for example, a lens configured to project and focus an image onto a viewing surface. (Appellant's specification, paragraphs 0025).

With regard to specific claims at issue on this appeal, claim 1 recites a method of displaying an image frame by projection in three dimensions (3D) or in two dimensions (2D) with a projection system, said method comprising: selecting between a 2D mode of operation and a separate 3D mode of operation for said projection system (Appellant's Fig. 11, element 190; and paragraph 0058); generating and projecting a left image sub-frame and a right image sub-frame during a frame period if said 3D mode of operation for said projection system is selected (Appellant's Fig. 11, element 195; and paragraph 0060); and generating and projecting only a 2D image frame during said frame period if said 2D mode of operation for said projection system is selected (Appellant's Fig. 11, element 191; and paragraph 0059); wherein said left image sub-frame defines a visual perspective of a left eye and said right image sub-frame defines a visual perspective of a right eye (Appellant's specification, paragraph 0038).

Claim 19 recites a method of displaying an image in three dimensions during a frame period, said method comprising: generating a left image sub-frame and a right image sub-frame, said left image sub-frame defining a visual perspective of a left eye and said right image sub-frame defining a visual perspective of a right eye for said image (Appellant's specification, paragraph 0019); displaying said left image sub-frame with an electronic display system (Appellant's Fig. 1, elements 107, 103, 104 and 105), wherein said electronic display system outputs a display of said left image sub-frame utilizing a first plurality of colors (Appellant's specification, paragraph 0019); and displaying said right image sub-frame with said display system, wherein said display system outputs a display of said right image sub-frame utilizing a second plurality of colors; (Appellant's specification, paragraph 0019) wherein said first plurality of colors is distinct from said second plurality of colors (Appellant's specification, paragraph 0019).

Claim 27 recites a display system with a selectable mode of operation for displaying an image frame in three dimensions (3D) or in two dimensions (2D), said system comprising: a spatial light modulator (Appellant's specification, Fig. 1, element 103); and an image processing unit (Appellant's specification, Fig. 1, element 107) configured to control said spatial light modulator in a selected mode of operation which is either a 3D mode of operation or a 2D mode of operation (Appellant's specification, Fig. 11, element 190); wherein if said selected mode of operation is said 3D mode of operation, said image processing unit outputs to said spatial light modulator a left image sub-frame carrying a left eye perspective and a right image sub-frame carrying a right eye perspective during a frame period (Appellant's Fig. 11, element 195; and paragraph 0060) and, if said selected mode of operation is said 2D mode of operation, said image processing unit outputs to said spatial

light modulator a 2D image frame to be displayed on a viewing surface during said frame period (Appellant's Fig. 11, element 191; and paragraph 0059).

Claim 48 recites a 3D imaging device, comprising: an image processing unit (Appellant's specification, Fig. 1, element 106) configured to generate image sub-frame data; and a color modulator (Appellant's specification, Fig. 1, elements 102 and 103) electronically coupled to said image processing unit (106) and configured to generate a plurality of image sub-frames based on said image sub-frame data; wherein said color modulator uses a first plurality of colors to output at least one image sub-frame of said plurality of image sub-frames and a second plurality of colors, distinct from said first plurality of colors, to output at least one other image sub-frame of said plurality of image sub-frames (Appellant's specification, paragraph 0019).

Claim 61 recites a system for displaying an image frame by projection in three dimensions (3D) or in two dimensions (2D) with a projection system, said system comprising: means for selecting between a 2D mode of operation and a separate 3D mode of operation for said projection system (Appellant's specification, Fig. 4, element 106); means for generating and projecting a left image sub-frame and a right image sub-frame if said 3D mode of operation is selected for said projection system (Appellant's specification, Fig. 4, elements 130, 132, 133, 107, 103 and 104); and means for generating and projecting a 2D image frame if said 2D mode of operation is selected for said projection system (Appellant's specification, Fig. 4, elements 131, 134, 107, 103 and 104; wherein said left and right image sub-frames are left and right perspectives during a frame period if said 3D mode of operation is selected (Appellant's specification, paragraph 0019) and said 2D image frame is displayed during said frame period if said 2D mode of operation is selected; wherein said 2D image

frame does not comprise sub-frames having different perspectives (Appellant's Fig. 11, element 191; and paragraph 0059).

Claim 66 recites a system for displaying an image in three dimensions during a frame period, said system comprising: means for generating a left image sub-frame and a right image sub-frame (Appellant's specification, Fig. 4, elements 130, 132, 133, 107, 103 and 104), said left image sub-frame defining a visual perspective of a left eye and said right image sub-frame defining a visual perspective of a right eye for said image (Appellant's specification, paragraph 0019); means for electronically displaying said left image sub-frame utilizing a first plurality of colors to compose the display of the left image sub-frame (Appellant's specification, Fig. 4, elements 130, 132, 133, 107, 102, 103 and 104); and means for electronically displaying said right image sub-frame utilizing a second plurality of colors to compose the display of the right image sub-frame (Appellant's specification, Fig. 4, elements 130, 132, 133, 107, 102, 103 and 104); wherein said first plurality of colors is distinct from said second plurality of colors (Appellant's specification, paragraph 0019).

Claim 20 recites wherein said first plurality of colors and said second plurality of colors comprise different sets of primary colors (Appellant's specification, paragraphs 0019 and 0040). Claim 49 recites wherein said first plurality of colors and said second plurality of colors comprise different sets of primary colors (Appellant's specification, paragraphs 0019 and 0040).

VI. Grounds of Rejection to be Reviewed on Appeal

In the latest Office Action, no less than 25 separate grounds of rejection were made. Each of the grounds of rejection is listed below in the order given in the latest Office Action.

(1) Claims 1, 5-7 and 46 were rejected under 35 U.S.C. § 103(a) over the combined teachings of U.S. Patent No. 5,671,007 to Songer ("Songer"), U.S. Patent No. 6,335,755 to McLaine et al. ("McLaine") and U.S. Patent Application Publication No. 2004/0252756 to Smith ("Smith").

(2) Claim 18 was rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Smith and U.S. Patent Application Publication No. 2003/0112507 to Divelbiss et al. ("Divelbiss").

(3) Claim 2 was rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Smith and U.S. Patent No. 5,870,137 to Stuettler ("Stuettler").

(4) Claim 3 was rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Smith, Stuettler and U.S. Patent Application Publication No. 2003/0234790 to Hochmuth et al. ("Hochmuth").

(5) Claim 4 was rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Smith and Hochmuth.

(6) Claims 8-11 and 15 were rejected under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Smith and U.S. Patent No. 4,236,172 to Krasnoperov ("Krasnoperov").

(7) Claims 12 was rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Smith, Krasnoperov and Divelbiss.

(8) Claim 13 was rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Smith, Krasnoperov and Anderson (of record) ("Anderson").

(9) Claim 14 was rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Smith, Krasnoperov and Sato (of record) ("Sato").

(10) Claims 16 and 17 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Smith, Krasnoperov and Bolas (of record) ("Bolas").

(11) Claims 19-26, 48, 49, 53, 55, 56, 58 and 66 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Divelbiss and Krasnoperov.

(12) Claims 27-30, 33-35 and 45 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer and McLaine.

(13) Claim 30 was rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine and Stuettler.

(14) Claims 31 and 32 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Stuettler and Hochmuth.

(15) Claims 36-38 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine and Krasnoperov.

(16) Claims 39 and 40 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Krasnoperov and Divelbiss.

(17) Claim 41 was rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Krasnoperov and Sato.

(18) Claims 43 and 44 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Krasnoperov and Bolas

(19) Claim 47 was rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine and Anderson.

(20) Claims 50 and 54 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Divelbiss, Krasnoperov and Stuettler.

(21) Claims 51 and 52 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Divelbiss, Krasnoperov and Bolas.

(22) Claim 57 was rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Divelbiss, Krasnoperov and Songer.

(23) Claims 61, 64 and 65 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, Smith and Taniguchi (of record) ("Taniguchi").

(24) Claims 62 and 63 were rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Smith, Taniguchi and Stuettler.

(25) Claim 67 was rejected as being unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Songer, McLaine, Smith and Taniguichi.

Appellant respectfully requests review of these grounds of rejection in light of the following arguments.

VII. Argument

(1) Claims 1, 5-7 and 46 are patentable over Songer, McLaine and Smith:

Claim 1:

Claim 1 recites:

> A method of displaying an image frame by projection in three dimensions (3D) or in two dimensions (2D) with a projection system, said method comprising:
> selecting between a 2D mode of operation and a separate 3D mode of operation for said projection system;
> *generating and projecting a left image sub-frame and a right image sub-frame during a frame period if said 3D mode of operation for said projection system is selected; and*
> *generating and projecting only a 2D image frame during said frame period if said 2D mode of operation for said projection system is selected;*
> wherein said left image sub-frame defines a visual perspective of a left eye and said right image sub-frame defines a visual perspective of a right eye.

(emphasis added).

In contrast, Songer does not teach or suggest a method of displaying an image that involves selectively operating in one of two separate modes, 2D or 3D. As conceded in the latest Office Action, "Songer does not disclose a system for selecting between a 2D mode of operation and a separate 3D mode of operation; and including a projection display for a 2D/3D projection system." (Action, p. 3).

Consequently, the Action cites to McLaine. (Action, p. 4). On this point, McLaine teaches the following.

> A simple switch 890 allows a user to switch between normal color television reception and 3-dimensional color television reception. In normal mode all three image planes from right decoder 860 are fed to color television display 870. In 3-dimensional color television mode, a user might dial up the video information provider over network 880 and request 3-dimensional service. *The video information provider would then allow, after suitable arrangements for compensation have been made, the user to download the red image plane of the left camera 800 to complete the 3-dimensional image.* The presence of 3-dimensional image data on the point to point communications link can be detected automatically and utilized to control

> switch 890 so that 3-dimensional information is displayed when 3-dimensional information is available and otherwise 2-dimensional information is displayed.

(McLaine, col. 8, line63 to col. 9, line 12).

Thus, McLaine teaches a system in which a 3-dimensional image is *always* being produced and distributed. However, the user will have to compensate the service provider in order "to download the red image plane of the left camera 800 to complete the 3-dimensional image." (*Id.*).

Thus, the combination of Songer and McLaine still fails to teach or suggest the claimed method including "generating and projecting a left image sub-frame and a right image sub-frame during a frame period *if said 3D mode of operation for said projection system is selected*; and generating and projecting only a 2D image frame during said frame period *if said 2D mode of operation for said projection system is selected.*" (Claim 1). To the contrary, as noted above, McLaine teaches a method in which the 3D image is always created and available, but requires payment before receipt by the user. For at least this reason, this rejection of claim 1 should not be sustained.

Additionally, neither Songer nor McLaine relate to projecting images as in the method of claim 1. Consequently, the Office Action cites to Smith for this subject matter. (Action, p. 4). Smith teaches a trigger for alerting stereo glasses whether to function for 3D or 2D viewing with a projection display. Therefore, Smith does not cure the deficiency of Songer and McLaine described above.

Specifically, the three cited prior art references, alone or in combination, do not teach or suggest the claimed method including "***generating*** and projecting a left image sub-frame and a right image sub-frame during a frame period ***if said 3D mode of operation for said projection system is selected***; and ***generating*** and projecting only a 2D image frame during said frame period ***if said 2D mode of operation for said projection system is selected.***"

There is no connection taught in Smith, McLaine or Songer between the operating mode selected and the type of frame/sub-frame that is then accordingly ***generated***.

Under the analysis required by *Graham v. John Deere*, 383 U.S. 1 (1966) to support a rejection under § 103, the scope and content of the prior art must first be determined, followed by an assessment of the differences between the prior art and the claim at issue in view of the ordinary skill in the art. In the present case, the scope and content of the prior art, as evidenced by Songer, McLaine and Smith, did not include the claimed method of selectively generating either (1) left and right sub-frames or (2) only a 2D image frame depending on whether a 3D or 2D mode of operation is selected. This subject matter is entirely outside the scope and content of the cited prior art.

Moreover, this difference between the cited prior art and the claimed subject matter is significant. As explained in Appellant's specification, the method of claim 1 provides features and advantages to the user of the projection system that were not available in the cited prior art. Consequently, the cited prior art will not support a rejection of claim 1 and its dependent claims under 35 U.S.C. § 103 and *Graham*.

(2) Claim 18 is patentable over Songer, McLaine, Smith and Divelbiss:

Appellant's claim 18 is patentable over this ground of rejection for at least the same reasons given above in favor of the patentability of claim 1.

(3) Claim 2 is patentable over Songer, McLaine, Smith and Stuettler:

Appellant's claim 2 is patentable over this ground of rejection for at least the same reasons given above in favor of the patentability of claim 1.

(4) Claim 3 is patentable over Songer, McLaine, Smith, Stuettler and Hochmuth:

Appellant's claim 3 is patentable over this ground of rejection for at least the same reasons given above in favor of the patentability of claim 1.

(5) Claim 4 is patentable over Songer, McLaine, Smith and Hochmuth:

Appellant's claim 4 is patentable over this ground of rejection for at least the same reasons given above in favor of the patentability of claim 1.

(6) Claims 8-11 and 15 are patentable over Songer, McLaine, Smith and Krasnoperov:

Claim 8:

Claim 8 recites "wherein said left image sub-frame comprises a first group of colors and said right image sub-frame comprises a second group of colors distinct from said first group of colors." As will be demonstrated below in connection with claim 19, the cited prior art, including Krasnoperov, fails to teach or suggest this subject matter. Specifically, the cited prior art fails to teach or suggest first and second groups of distinct color corresponding to left and right image sub-frames. Consequently, the rejection of claim 8 should not be sustained for at least the reasons given above in favor of the patentability of claim 1 and the discussion below of claim 19.

Claim 11:

Claim 11 recites "wherein said first group of colors comprises red, green, and blue and said second group of colors comprises cyan, yellow, and magenta." As will be clear from the discussion of Krasnoperov below, the cited prior art fails to teach or suggest first and second groups of distinct colors corresponding to left and right image sub-frames.

Consequently, the cited prior art also fails to teach or suggest this subject matter of claim 11, and the rejection of claim 11 should not be sustained.

Claim 15:

Claim 15 recites "generating said colors in said first and second groups of colors with a diffractive light device." As will be clear from the discussion of Krasnoperov below, the cited prior art fails to teach or suggest first and second groups of distinct colors corresponding to left and right image sub-frames. Consequently, the cited prior art also fails to teach or suggest this subject matter of claim 15, and the rejection of claim 15 should not be sustained.

(7) Claims 12 is patentable over Songer, McLaine, Smith, Krasnoperov and Divelbiss;

Claim 12 recites "generating said colors in said first and second groups of colors with a sequential color device." As will be clear from the discussion of Krasnoperov below, the cited prior art fails to teach or suggest first and second groups of distinct colors corresponding to left and right image sub-frames. Consequently, the cited prior art also fails to teach or suggest this subject matter of claim 12, and the rejection of claim 12 should not be sustained.

(8) Claim 13 is patentable over Songer, McLaine, Smith, Krasnoperov and Anderson;

Claim 13 recites "generating said colors in said first and second group of colors with a scrolling color device." As will be clear from the discussion of Krasnoperov below, the cited prior art fails to teach or suggest first and second groups of distinct colors corresponding to left and right image sub-frames. Consequently, the cited prior art also fails to teach or suggest this subject matter of claim 13, and the rejection of claim 13 should not be sustained.

(9) Claim 14 is patentable over Songer, McLaine, Smith Kasnoperov and Sato:

Claim 14 recites "generating said colors in said first and second groups of colors with a parallel color device." As will be clear from the discussion of Krasnoperov below, the cited prior art fails to teach or suggest first and second groups of distinct colors corresponding to left and right image sub-frames. Consequently, the cited prior art also fails to teach or suggest this subject matter of claim 14, and the rejection of claim 14 should not be sustained.

(10) Claims 16 and 17 are patentable over Songer, McLaine, Smith, Kasnoperov and Bolas:

Claim 16 and 17 are patentable over the cited prior art for at least the reasons given above in favor of the patentability of claim 1.

(11) Claims 19-26, 48, 49, 53, 55, 56, 58 and 66 are patentable over Krasnoperov and Divelbiss:

Claim 19:

Original independent claim 19 recites:

> A method of displaying an image in three dimensions during a frame period, said method comprising:
> generating a left image sub-frame and a right image sub-frame, said left image sub-frame defining a visual perspective of a left eye and said right image sub-frame defining a visual perspective of a right eye for said image;
> displaying said left image sub-frame with an electronic display system, wherein said electronic display system outputs a display of said left image sub-frame utilizing a first plurality of colors; and
> displaying said right image sub-frame with said display system, wherein said display system outputs a display of said right image sub-frame utilizing a second plurality of colors;
> *wherein said first plurality of colors is distinct from said second plurality of colors.*

(Emphasis added).

Appellant wishes to note that claim 19 recites *displaying* the left sub-frame using a first plurality of colors and the right sub-frames using a second, different i.e., "distinct" plurality of colors. Moreover, this "displaying" occurs on *"an electronic display system."* This means that a separate set of colors is used *on the electronic display* to generate/display each of the two sub-frames respectively, irrespective of what colors are perceived by a viewer wearing filter glasses.

In contrast, in the system taught by Divelbiss, the image is always displayed on the display device with the same set of primary colors, *only a single plurality of colors*, (RGB see Fig. 43). Thus, Divelbiss cannot teach or suggest displaying different sub-frames with different pluralities of colors as recited in claim 19.

Consequently, Divelbiss does not teach or suggest a method in which left and right image sub-frames are *displayed* on *an electronic display system* utilizing *distinct pluralities of colors*. The latest Office Action somewhat concedes this point stating that "Divelbiss does not disclose a method wherein said first plurality of colors is distinct from said second plurality of colors." (Action, p. 14).

Consequently, the latest Office Action cites to Krasnoperov. According to the Action, "Krasnoperov teaches a method wherein said first plurality of colors is distinct from said second plurality of colors." (Action, p. 14). This is clearly incorrect, and the Action has entirely misunderstood the teachings of Krasnoperov.

Krasnoperov teaches a method of broadcasting stereoscopic color television in a way that "is compatible with monochrome [black & white] television." (Krasnoperov, col. 1, lines 67-68). To achieve this, Krasnoperov starts with left and right frames of a stereoscopic pair, both consisting of red, green and blue components. (R_1, G_1, B_1 and R_2, G_2, B_2) (Krasnoperov, col. 3, lines 25 to col. 4, line 6). In order to transmit the various color components in a

manner compatible with monochrome television, Krasnoperov teaching mixes the red, green and blue components of the left and right stereoscopic frames such that the "entire information on the stereoscopic colour picture is contained in three signals." (Krasnoperov, col. 8, lines 49-50). This mixing of components results in *signals* that represent mixes of the three primary colors, such as cyan and magenta. (Krasnoperov, col. 5, line 58 to col. 6, line 68).

After the three signals are transmitted or broadcast, they are again processed to retrieve the red, green and blue components for each of the two frames in a stereoscopic pair. (Krasnoperov, col. 9, lines 10-33). The two frames of the stereoscopic pair are then displayed with a television system having "red, green and blue phosphors." (Krasnoperov, col. 8, lines 39-42). There is no second, distinct plurality of colors used by the display taught in Krasnoperov. A human viewer wearing colored-filter glasses then sees the stereoscopic effect in the traditional manner. (Krasnoperov, col. 9, lines 28-29 and 32-33).

Consequently, Krasnoperov does not teach, as the latest Office Action suggests, using two distinct pluralities of colors for displaying respectively, on an electronic display, left and right image sub-frames as recited in claim 19. Rather, Krasnoperov only teaches using the traditional red, green and blue colors in a stereoscopic display.

Under the analysis required by *Graham v. John Deere*, 383 U.S. 1 (1966) to support a rejection under § 103, the scope and content of the prior art must first be determined, followed by an assessment of the differences between the prior art and the claim at issue in view of the ordinary skill in the art. In the present case, neither Divelbiss nor Krasnoperov remotely teach or suggest the claimed method including displaying left and right image sub-frames with an electronic display system using, respectively, first and second "distinct" pluralities of colors. This subject matter is entirely outside the scope and content of the cited

prior art. This difference between the cited prior art and the claimed subject matter is substantial. As explained in Appellant's specification, using two distinct pluralities of colors to display left and right sub-frames of a three-dimensional image provides advantages that were unknown and unavailable in the cited prior art. Consequently, the cited prior art will not support a rejection of claim 19 and its dependent claims under 35 U.S.C. § 103 and *Graham*.

Claim 48:

Similarly, independent claim 48 recites:

> A 3D imaging device, comprising:
> an image processing unit configured to generate image sub-frame data; and
> *a color modulator electronically coupled to said image processing unit* and configured to generate a plurality of image sub-frames based on said image sub-frame data;
> *wherein said color modulator uses a first plurality of colors to output at least one image sub-frame of said plurality of image sub-frames and a second plurality of colors, distinct from said first plurality of colors, to output at least one other image sub-frame* of said plurality of image sub-frames.

(Emphasis added).

Thus, claim 48 specifically recites the hardware of a color modulator electronically coupled to an image processing unit that used two different pluralities of colors to output different image sub-frames.

As demonstrated above, Divelbiss and Krasnoperov utterly fails to teach or suggest such subject matter; specifically, a color modulator that is electronically coupled to an image processing unit and that "uses a first plurality of colors to output at least one image sub-frame of said plurality of image sub-frames and a second plurality of colors, distinct from said first plurality of colors, to output at least one other image sub-frame of said plurality of image sub-frames." Neither Divelbiss nor Krasnoperov, alone or in any combination, teach or suggest a

color modulator electronically coupled to an image processing unit that uses distinct pluralities of colors to generate different sub-frames.

As before, under the analysis required by *Graham v. John Deere*, 383 U.S. 1 (1966) to support a rejection under § 103, the scope and content of the prior art must first be determined, followed by an assessment of the differences between the prior art and the claim at issue in view of the ordinary skill in the art. In the present case, the scope and content of the prior art, as evidenced by Divelbiss and Krasnoperov clearly did not include the subject matter of claim 48. Therefore, the cited prior art will not support a rejection of claim 48 and its dependent claims under 35 U.S.C. § 103 and *Graham*.

Claim 66:

Additionally, independent claim 66 recites:

> A system for displaying an image in three dimensions during a frame period, said system comprising:
> means for generating a left image sub-frame and a right image sub-frame, said left image sub-frame defining a visual perspective of a left eye and said right image sub-frame defining a visual perspective of a right eye for said image;
> *means for electronically displaying said left image sub-frame utilizing a first plurality of colors to compose the display of the left image sub-frame; and*
> *means for electronically displaying said right image sub-frame utilizing a second plurality of colors to compose the display of the right image sub-frame;*
> *wherein said first plurality of colors is distinct from said second plurality of colors.*

(Emphasis added).

As demonstrated above, Divelbiss and Krasnoperov fail to teach or suggest this subject matter; specifically, a system including means for displaying left and right image sub-frames utilizing distinct first and second pluralities of colors. Under the analysis required by Graham v. John Deere, 383 U.S. 1 (1966) to support a rejection under § 103, the scope and content of the prior art must first be determined, followed by an assessment of the differences

between the prior art and the claim at issue in view of the ordinary skill in the art. In the present case, the scope and content of the prior art, as evidenced by Divelbiss and Krasnoperov clearly did not include the subject matter of claim 66. Therefore, the cited prior art will not support a rejection of claim 66 and its dependent claims under 35 U.S.C. § 103 and *Graham*.

Claims 20 and 49:

Additionally, dependent claim 20 recites "wherein said first plurality of colors and said second plurality of colors comprise different sets of primary colors." Claim 49 recites similar subject matter.

As explained in Appellant's specification and as well known in the art, there are different sets of primary colors from which all other colors can be derived. For example, red, green and blue are considered a set of primary colors. Cyan, yellow and magenta are considered another set of primary colors. (Appellant's specification, paragraph 0047).

As demonstrated, Divelbiss and Krasnoperov do not teach or suggest first and second pluralities of colors. The both the Divelbiss and Krasnoperov systems use viewing glasses or filters that distinguish between green and magenta. Divelbiss and Krasnoperov only teach a single set of primary colors used in an electronic display of a 3D or stereoscopic image, i.e., red, green and blue. (Divelbiss, paragraph 0048-0059; Krasnoperov, col. 9, lines 40-44). For at least this additional reason, claims 20 and 49 should be held clearly patentable over Divelbiss and Krasnoperov.

(12) Claims 27-30, 33-35 and 45 are patentable over Songer and McLaine:

Claim 27:

Independent claim 27 recites:

> A display system with a selectable mode of operation for displaying an image frame in three dimensions (3D) or in two dimensions (2D), said system comprising:
> a spatial light modulator; and
> *an image processing unit configured to control said spatial light modulator in a selected mode of operation which is either a 3D mode of operation or a 2D mode of operation*;
> wherein if said selected mode of operation is said 3D mode of operation, said image processing unit outputs to said spatial light modulator a left image sub-frame carrying a left eye perspective and a right image sub-frame carrying a right eye perspective during a frame period and, if said selected mode of operation is said 2D mode of operation, said image processing unit outputs to said spatial light modulator a 2D image frame to be displayed on a viewing surface during said frame period.

(emphasis added).

In contrast, Songer does not teach or suggest any of the subject matter of claim 27. First, Songer does not teach or suggest a spatial light modulator. Songer teaches a "system and method for imaging and viewing, by a viewer, color and monochrome three-dimensional and two-dimensional images for broadcasting in accordance with NTSC, PAL, SECAM, and other world-wide electronic viewing formats." (Songer, abstract). The broadcast signal is display, for example, on a television set. (Songer, Fig. 1). Songer does not mention a spatial light modulator.

More importantly, Songer does not teach or suggest the claimed image processing unit configured to control a spatial light modulator where "if said selected mode of operation is said 3D mode of operation, said image processing unit outputs to said spatial light modulator a left image sub-frame carrying a left eye perspective and a right image sub-frame carrying a right eye perspective during a frame period and, if said selected mode of operation is said 2D mode of operation, said image processing unit outputs to said spatial light modulator a 2D image frame to be displayed on a viewing surface during said frame period." Rather, Songer

teaches that the "plurality of left-eye images and the plurality of right-eye images appear three-dimensional when viewed through the pair of viewing glasses, and appear two-dimensional when viewed without the glasses." (Songer, abstract). Thus, the display remains the same, but "appear[s] three-dimensional when viewed through the pair of viewing glasses, and appear[s] two-dimensional when viewed without the glasses." (*Id.*). Clearly, Songer does not teach or suggest the claimed image processing unit that controls a spatial light modulator differently in a 3D mode than a 2D mode. Rather, Songer merely teaches a display that remains constant, but may be viewed with or without special glasses.

Thus, Songer fails to teach or suggest either the spatial light modulator or the image processing unit as recited in claim 27. Consequently, the latest Office Action cites to McLaine.

However, as demonstrated above, McLaine teaches the following.

> A simple switch 890 allows a user to switch between normal color television reception and 3-dimensional color television reception. In normal mode all three image planes from right decoder 860 are fed to color television display 870. In 3-dimensional color television mode, a user might dial up the video information provider over network 880 and request 3-dimensional service. *The video information provider would then allow, after suitable arrangements for compensation have been made, the user to download the red image plane of the left camera 800 to complete the 3-dimensional image.* The presence of 3-dimensional image data on the point to point communications link can be detected automatically and utilized to control switch 890 so that 3-dimensional information is displayed when 3-dimensional information is available and otherwise 2-dimensional information is displayed.

(McLaine, col. 8, line63 to col. 9, line 12).

Thus, McLaine also fails to teach or suggest the claimed system with "an image processing unit configured *to control said spatial light modulator in a selected mode of operation* which is either a 3D mode of operation or a 2D mode of operation." (Claim 27). McLaine does not even mention a spatial light modulator. Consequently, McLaine fails to each or suggest the claimed image processing unit controlling a spatial light modulator as recited in claim 27.

Consequently, neither Songer nor McLaine teach or suggest the elements of the claims system including a spatial light modulator and an image processing unit configured to control such a spatial light modulator in a selected 3D or 2D mode of operation.

Under the analysis required by *Graham v. John Deere*, 383 U.S. 1 (1966) to support a rejection under § 103, the scope and content of the prior art must first be determined, followed by an assessment of the differences between the prior art and the claim at issue in view of the ordinary skill in the art. In the present case, the scope and content of the prior art, as evidenced by Songer and McLaine, did not encompass the claimed system including a spatial light modulator or an image processing unit configured to control such a spatial light modulator in a selected 3D or 2D mode of operation.. Moreover, as explained in Appellant's claims, the differences between the prior art and the claimed subject matter are significant because the system of claim 27 provides advantages that were not available in the cited prior art. Consequently, the cited prior art will not support a rejection of claim 27 and its dependent claims under 35 U.S.C. § 103 and *Graham*.

Claim 28:

Claim 28 recites:

> wherein said image processing unit comprises:
> a 3D coordinate conversion function configured to generate left and right image sub-frame data defining said left and right image sub-frames;
> wherein said spatial light modulator is configured to generate said left and right image sub-frames in accordance with said left and right image sub-frame data.

As demonstrated above, the cited prior art fails to teach or suggest the claimed image processing unit. Consequently, the cited prior art must also fail to teach or suggest the additional subject matter of claim 28. Therefore, the rejection of claim 28 should not be sustained.

Claim 29:

Claim 29 recites:

> wherein said image processing unit further comprises:
> a 2D coordinate conversion function configured to generate 2D image frame data defining said 2D image frame;
> wherein said spatial light modulator is further configured to generate said 2D image frame in accordance with said 2D image frame data.

As demonstrated above, the cited prior art fails to teach or suggest the claimed image processing unit. Consequently, the cited prior art must also fail to teach or suggest the additional subject matter of claim 29. Therefore, the rejection of claim 29 should not be sustained.

(13) Claim 30 is patentable over Songer, McLaine and Stuettler:

Claim 30 is patentable over the cited prior art for at least the same reasons given above in favor of the patentability of claims 27 and 29.

(14) Claims 31 and 32 are patentable over Songer, McLaine, Stuettler and Hochmuth:

Claims 31 and 32 are patentable over the cited prior art for at least the same reasons given above in favor of the patentability of claims 27 and 29.

(15) Claims 36-38 are patentable over Songer, McLaine and Krasnoperov:

Claim 36 recites "wherein said left image sub-frame comprises a first group of colors and said right image sub-frame comprises a second group of colors distinct from said first group of colors." Claims 37 and 38 recite related subject matter. As demonstrated above with respect to claim 19, the cited prior art fails to teach or suggest this subject matter. Consequently, this rejection should not be sustained.

(16) Claims 39 and 40 are patentable over Songer, McLaine, Krasnoperov and Divelbiss:

Claim 39 recites "wherein said system further comprises a sequential color device configured to generate said colors in said first and second groups of colors." Claim 40 recites related subject matter. As demonstrated above with respect to claim 19, the cited prior art fails to teach or suggest first and second distinct groups of colors. Consequently, the cited prior art must also fails to teach or suggest this related subject matter of claims 39 and 40. Therefore, this rejection should not be sustained.

(17) Claim 41 is patentable over Songer, McLaine, Krasnoperov and Sato:

Claim 41 recites "wherein said system further comprises a parallel color device configured to generate said colors in said first and second groups of colors." As demonstrated above with respect to claim 19, the cited prior art fails to teach or suggest first and second distinct groups of colors. Consequently, the cited prior art must also fails to teach or suggest this related subject matter of claim 41. Therefore, this rejection should not be sustained.

(18) Claims 43 and 44 are patentable over Songer, McLaine, Krasnoperov and Bolas:

Claims 43 and 44 are patentable over the cited prior art for at least the same reasons given above in favor of the patentability of claim 27.

(19) Claim 47 is patentable over Songer, McLaine and Anderson:

Claim 47 is patentable over the cited prior art for at least the same reasons given above in favor of the patentability of claim 27.

(20) Claims 50 and 54 are patentable over Divelbiss, Krasnoperov and Stuettler:

Claims 50 and 54 are patentable over the cited prior art for at least the same reasons given above in favor of the patentability of claim 48.

(21) Claims 51 and 52 are patentable over Divelbiss, Krasnoperov and Bolas:

Claims 51 and 52 are patentable over the cited prior art for at least the same reasons given above in favor of the patentability of claim 48.

(22) Claim 57 is patentable over Divelbiss, Krasnoperov and Songer:

Claim 57 is patentable over the cited prior art for at least the same reasons given above in favor of the patentability of claim 48.

(23) Claims 61, 64 and 65 are patentable over Songer, Smith and Taniguchi:

Claim 61:

Independent claim 61 recites:

> A system for displaying an image frame by projection in three dimensions (3D) or in two dimensions (2D) with a projection system, said system comprising:
> means for selecting between a 2D mode of operation and a separate 3D mode of operation for said projection system;
> means for generating and projecting a left image sub-frame and a right image sub-frame if said 3D mode of operation is selected for said projection system; and
> means for generating and projecting a 2D image frame if said 2D mode of operation is selected for said projection system;
> wherein said left and right image sub-frames are left and right perspectives during a frame period if said 3D mode of operation is selected and said 2D image frame is displayed during said frame period if said 2D mode of operation is selected;
> wherein said 2D image frame does not comprise sub-frames having different perspectives.

As noted above, this claim is rejected based on a proposed combination of the teachings of Songer, Smith and Taniguchi. However, that proposed combination of prior art teachings is unreasonable and would not have been obvious to one of skill in the art.

The teachings of Songer/Smith and Taniguchi work on entirely different principles and are incompatible. Songer and Smith both teach systems in which 3D images are perceived using mechanical viewing glasses with left and right light valves that open and close at a field rate and in synchronization with a displayed 3D image. (Songer, abstract; Smith, paragraph 0026).

In contrast, Taniguchi teaches a "parallax optic" that is selectively activated over an LCD to generate a perception of 3D viewing. (Taniguchi, paragraph 0009). This technique for creating a 3D display would not work with, and cannot be used in, a projected display. Claim 61 is a projection display system with "means for generating *and projecting* 3D mode sub-frames or 2D mode image frames. Similarly, Songer relates to a projection display system.

Accordingly, the latest Office Action fails to satisfactorily explain how or why these very different systems could be combined to approximate the claimed invention or why one of skill in the art would have found it obvious to do so. Consequently, the teachings of Taniguchi cannot reasonably be combined with those of Songer and Smith as proposed in the final Office Action.

The Supreme Court recently addressed the issue of obviousness in *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727 (2007). While the *KSR* court rejected a rigid application of the teaching, suggestion, or motivation ("TSM") test in an obviousness inquiry, the Court acknowledged the importance of identifying "a reason that would have prompted a person of ordinary sill in the relevant field to combine the element in the way the claimed new

invention does" in an obviousness determination. *KSR*, 127 S.CT. at 1731. Moreover, the Supreme Court in *KSR* stated that the Examiner must provide "some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness", such that the Examiner must "identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." It stands to reason, therefore, that the Federal Circuit's precept is still is good law that "[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)." M.P.E.P. § 2143.01.

Applicant also notes that it is improper to combine references where the references teach away from their combination. (*In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983)) This principle was cited with approval in the recent Supreme Court decision, *KSR*. The Supreme Court in *KSR* discussed in some detail *United States v. Adams*, 383 U.S. 39 (1966), stating in part that in that case, "[t]he Court relied upon the corollary principle that when the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious." Accordingly, it remains improper to combine references where the references teach away from their combination.

For any and all of these reasons, the proposed combination of Songer, Smith and Taniguchi does not render claim 61 obvious. Consequently, the rejection of claim 61 and its dependent claims should not be sustained.

(24) Claims 62 and 63 are patentable over Songer, McLaine, Smith, Taniguchi and Stuettler:

Claims 52 and 63 are patentable over the cited prior art for at least the same reasons given above in favor of the patentability of claim 61.

(25) Claim 67 is patentable over Songer, McLaine, Smith and Taniguichi:

Claim 67 is patentable over the cited prior art for at least the same reasons given above in favor of the patentability of claim 1.

In view of the foregoing, it is submitted that the final rejection of the pending claims is improper and should not be sustained. Therefore, a reversal of the Final Rejection of November 24, 2006 and the latest Office Action is respectfully requested.

Respectfully submitted,

DATE: April 30, 2008

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I hereby certify that this correspondence is being transmitted to the Patent and Trademark Office facsimile number **571-273-8300** on **April 30, 2008**. Number of Pages: **57**

Rebecca R. Schow

VIII. CLAIMS APPENDIX

1. (previously presented) A method of displaying an image frame by projection in three dimensions (3D) or in two dimensions (2D) with a projection system, said method comprising:

selecting between a 2D mode of operation and a separate 3D mode of operation for said projection system;

generating and projecting a left image sub-frame and a right image sub-frame during a frame period if said 3D mode of operation for said projection system is selected; and

generating and projecting only a 2D image frame during said frame period if said 2D mode of operation for said projection system is selected;

wherein said left image sub-frame defines a visual perspective of a left eye and said right image sub-frame defines a visual perspective of a right eye.

2. (previously presented) The method of claim 1, wherein generating said left and right image sub-frames comprises:

generating left and right image sub-frame data defining said left and right image sub-frames;

storing said left image sub-frame data in a first buffer;

storing said right image sub-frame data in a second buffer; and

controlling a spatial light modulator with said left and right image sub-frame data in said first and second buffers to generate said left and right image sub-frames.

3. (original) The method of claim 2, wherein a single buffer unit comprises said first and second buffers.

4. (previously presented) The method of claim 1, wherein generating said 2D image frame comprises:

generating 2D image frame data defining said 2D image frame;

storing said 2D image frame data in a buffer; and

controlling a spatial light modulator with said 2D image frame data in said buffer to generate said 2D image frame.

5. (original) The method of claim 1, further comprising:

dividing said frame period into a first sub-frame period and a second sub-frame period;

displaying said left image sub-frame during said first sub-frame period; and

displaying said right image sub-frame during said second sub-frame period.

6. (original) The method of claim 1, further comprising:

dividing said frame period into a number of sub-frame periods;

displaying said left image sub-frame during one or more of said sub-frame periods; and

displaying said right image sub-frame during one or more of said sub-frame periods;

wherein said left and right image sub-frames are displayed in an interleaved manner.

7. (original) The method of claim 1, further comprising viewing said left and right image sub-frames through glasses comprising a left lens configured to allow a left eye to only perceive said left image sub-frame and a right lens configured to allow a right eye to only perceive said right image sub-frame.

8. (original) The method of claim 1, wherein said left image sub-frame comprises a first group of colors and said right image sub-frame comprises a second group of colors distinct from said first group of colors.

9. (original) The method of claim 8, wherein said 2D image frame comprises one or more of said colors in said first and second groups of colors.

10. (original) The method of claim 8, wherein said first group of colors comprises two or more colors and said second group of colors comprises two or more colors.

11. (original) The method of claim 8, wherein said first group of colors comprises red, green, and blue and said second group of colors comprises cyan, yellow, and magenta.

12. (original) The method of claim 8, further comprising generating said colors in said first and second groups of colors with a sequential color device.

13. (original) The method of claim 8, further comprising generating said colors in said first and second group of colors with a scrolling color device.

14. (original) The method of claim 8, further comprising generating said colors in said first and second groups of colors with a parallel color device.

15. (original) The method of claim 8, further comprising generating said colors in said first and second groups of colors with a diffractive light device.

16. (original) The method of claim 15, further comprising notch filtering light incident upon said diffractive light device.

17. (original) The method of claim 15, further comprising notch filtering light reflecting from said diffractive light device.

18. (original) The method of claim 1, wherein said left image sub-frame and said right image sub-frame have differing polarizations.

19. (previously presented) A method of displaying an image in three dimensions during a frame period, said method comprising:

generating a left image sub-frame and a right image sub-frame, said left image sub-frame defining a visual perspective of a left eye and said right image sub-frame defining a visual perspective of a right eye for said image;

displaying said left image sub-frame with an electronic display system, wherein said electronic display system outputs a display of said left image sub-frame utilizing a first plurality of colors; and

displaying said right image sub-frame with said display system, wherein said display system outputs a display of said right image sub-frame utilizing a second plurality of colors;

wherein said first plurality of colors is distinct from said second plurality of colors.

20. (original) The method of claim 19, wherein said first plurality of colors and said second plurality of colors comprise different sets of primary colors.

21. (original) The method of claim 19, further comprising:

dividing said frame period into a plurality of sub-frame time periods including at least one left sub-frame time period and one right sub-frame time period;

displaying said left image sub-frame during said at least one left sub-frame time period; and

displaying said right sub-frame image during said at least one right image sub-frame time period.

22. (original) The method of claim 19, wherein said left image sub-frame is displayed during a first portion of said frame period and said right image sub-frame is displayed during a second portion of said frame period, wherein said first portion and said second portion are overlapping.

23. (original) The method of claim 19, wherein said first plurality of colors includes red, green, and blue.

24. (previously presented) The method of claim 25, wherein said second plurality of colors includes red, green, and blue.

25. (original) The method of claim 19, wherein said first plurality of colors includes cyan, yellow, and magenta.

26. (original) The method of claim 19, wherein said second plurality of colors includes cyan, yellow, and magenta.

27. (previously presented) A display system with a selectable mode of operation for displaying an image frame in three dimensions (3D) or in two dimensions (2D), said system comprising:

a spatial light modulator; and

an image processing unit configured to control said spatial light modulator in a selected mode of operation which is either a 3D mode of operation or a 2D mode of operation;

wherein if said selected mode of operation is said 3D mode of operation, said image processing unit outputs to said spatial light modulator a left image sub-frame carrying a left eye perspective and a right image sub-frame carrying a right eye perspective during a frame period and, if said selected mode of operation is said 2D mode of operation,

said image processing unit outputs to said spatial light modulator a 2D image frame to be displayed on a viewing surface during said frame period.

28. (original) The system of claim 27, wherein said image processing unit comprises:

a 3D coordinate conversion function configured to generate left and right image sub-frame data defining said left and right image sub-frames;

wherein said spatial light modulator is configured to generate said left and right image sub-frames in accordance with said left and right image sub-frame data.

29. (original) The system of claim 28, wherein said image processing unit further comprises:

a 2D coordinate conversion function configured to generate 2D image frame data defining said 2D image frame;

wherein said spatial light modulator is further configured to generate said 2D image frame in accordance with said 2D image frame data.

30. (original) The system of claim 29, further comprising:

a first buffer for storing said left image sub-frame data to be used by said spatial light modulator to generate said left image sub-frame;

a second buffer for storing said right image sub-frame data to be used by said spatial light modulator to generate said right image sub-frame; and

a third buffer for storing said 2D image frame data to be used by said spatial light modulator to generate said 2D image frame.

31. (original) The system of claim 30, wherein a single buffer unit comprises said first, second, and third buffers.

32. (original) The system of claim 30, wherein a single buffer unit comprises said first and second buffers.

33. (original) The system of claim 27, wherein said frame period comprises a first sub-frame period and a second sub-frame period, said left image sub-frame being displayed during said first sub-frame period and said right image sub-frame being displayed during said second sub-frame period.

34. (original) The system of claim 27, wherein said frame period comprises a number of sub-frame periods, wherein said left and right image sub-frames are each displayed during one or more of said sub-frame periods in an interleaved manner.

35. (original) The system of claim 27, further comprising glasses, said glasses comprising:

a left lens configured to allow a left eye of a user of said glasses to only perceive said left image sub-frame; and

a right lens configured to allow a right eye of a user of said glasses to only perceive said right image sub-frame.

36. (original) The system of claim 27, wherein said left image sub-frame comprises a first group of colors and said right image sub-frame comprises a second group of colors distinct from said first group of colors.

37. (previously presented) The system of claim 36, wherein said 2D image frame comprises one or more of said colors in said first and second groups of colors.

38. (previously presented) The system of claim 36, wherein said first group of colors comprises two or more colors and said second group of colors comprises two or more colors.

39. (previously presented) The system of claim 36, wherein said system further comprises a sequential color device configured to generate said colors in said first and second groups of colors.

40. (original) The system of claim 39, wherein said sequential color device is a color filter wheel.

41. (previously presented) The system of claim 36, wherein said system further comprises a parallel color device configured to generate said colors in said first and second groups of colors.

42. (previously presented) The system of claim 36, wherein said spatial light modulator comprises a diffractive light device configured to generate said colors in said first and second groups of colors.

43. (original) The system of claim 42, further comprising one or more notch filters configured to notch filter light incident upon said diffractive light device.

44. (original) The system of claim 42, further comprising one or more notch filters configured to notch filter light reflected from said diffractive light device.

45. (original) The system of claim 27, wherein said mode of operation is selected by a user of said display system.

46. (original) The system of claim 27, wherein said mode of operation is selected automatically without user intervention.

47. (original) The system of claim 27, wherein said spatial light modulator is selected from the group consisting of an analog based light modulator, a pulse-width modulation based light modulator, a liquid crystal display (LCD) panel, a liquid crystal on silicon (LCOS) device, a diffractive light device (DLD), and an array of micromirrors.

48. (previously presented) A 3D imaging device, comprising:

an image processing unit configured to generate image sub-frame data; and

a color modulator electronically coupled to said image processing unit and configured to generate a plurality of image sub-frames based on said image sub-frame data;

wherein said color modulator uses a first plurality of colors to output at least one image sub-frame of said plurality of image sub-frames and a second plurality of colors, distinct from said first plurality of colors, to output at least one other image sub-frame of said plurality of image sub-frames.

49. (original) The 3D imaging device of claim 48, wherein said first plurality of colors and said second plurality of colors comprise different sets of primary colors.

50. (original) The 3D imaging device of claim 48, further comprising one or more image sub-frame buffers for storing said image sub-frame data generated by said image processing unit.

51. (original) The 3D imaging device of claim 48, further comprising:

a light source for illuminating said color modulator; and

at least one notch filter disposed between said light source and said color modulator.

52. (original) The 3D imaging device of claim 48, further comprising at least one notch filter disposed between said color modulator and a viewing surface.

53. (original) The 3D imaging device of claim 48, further comprising:

at least one set of lenses having a first and second lens wherein said first lens filters out said first plurality of colors and said second lens filters out said second plurality of colors.

54. (original) The 3D imaging device of claim 48, wherein said color modulator displays said at least one image sub-frame and said at least one other image sub-frame buffer during one frame period.

55. (original) The 3D imaging device of claim 48, wherein said color modulator displays said at least one image sub-frame and said at least one other image sub-frame at the same time during one frame period.

56. (original) The 3D imaging device of claim 48, wherein said color modulator includes an array of pixels and is configured to display said at least one image sub-frame and said at least one other image sub-frame in alternating adjacent pixels during at least a portion of one frame period.

57. (original) The 3D imaging device of claim 48, wherein said imaging processing unit is further configured to generate 2D image frame data, wherein said color modulator generates a 2D image frame based on said 2D image frame data.

58. (original) The 3D imaging device of claim 57, wherein said 2D image frame includes said first set of primary colors and said second set of primary colors.

59-60. (withdrawn)

61. (previously presented) A system for displaying an image frame by projection in three dimensions (3D) or in two dimensions (2D) with a projection system, said system comprising:

means for selecting between a 2D mode of operation and a separate 3D mode of operation for said projection system;

means for generating and projecting a left image sub-frame and a right image sub-frame if said 3D mode of operation is selected for said projection system; and

means for generating and projecting a 2D image frame if said 2D mode of operation is selected for said projection system;

wherein said left and right image sub-frames are left and right perspectives during a frame period if said 3D mode of operation is selected and said 2D image frame is displayed during said frame period if said 2D mode of operation is selected;

wherein said 2D image frame does not comprise sub-frames having different perspectives.

62. (original) The system of claim 61, wherein said means for generating said left and right image sub-frames comprises:

means for generating left and right image sub-frame data defining said left and right image sub-frames;

means for storing said left image sub-frame data in a first buffer;

means for storing said right image sub-frame data in a second buffer; and

means for controlling a spatial light modulator with said left and right image sub-frame data in said first and second buffers to generate said left and right image sub-frames.

63. (original) The system of claim 61, wherein said means for generating said 2D image frame comprises:

means for generating 2D image frame data defining said 2D image frame;

means for storing said 2D image frame data in a buffer; and

means for controlling a spatial light modulator with said 2D image frame data in said buffer to generate said 2D image frame.

64. (original) The system of claim 61, further comprising:

means for dividing said frame period into a first sub-frame period and a second sub-frame period;

means for displaying said left image sub-frame during said first sub-frame period; and

means for displaying said right image sub-frame during said second sub-frame period.

65. (original) The system of claim 61, further comprising:

means for dividing said frame period into a number of sub-frame periods;

means for displaying said left image sub-frame during one or more of said sub-frame periods; and

means for displaying said right image sub-frame during one or more of said sub-frame periods;

wherein said left and right image sub-frames are displayed in an interleaved manner.

66. (previously presented) A system for displaying an image in three dimensions during a frame period, said system comprising:

means for generating a left image sub-frame and a right image sub-frame, said left image sub-frame defining a visual perspective of a left eye and said right image sub-frame defining a visual perspective of a right eye for said image;

means for electronically displaying said left image sub-frame utilizing a first plurality of colors to compose the display of the left image sub-frame; and

means for electronically displaying said right image sub-frame utilizing a second plurality of colors to compose the display of the right image sub-frame;

wherein said first plurality of colors is distinct from said second plurality of colors.

67. (previously presented) The method of claim 1, wherein generating said left and right image sub-frames and said 2D image frame comprises:

storing said left and right image sub-frames in a first buffer; and

storing said 2D image frame data in a second buffer; and

controlling a spatial light modulator with data from either said first or second buffer depending on the selected mode of operation.

IX. Evidence Appendix

None

X. Related Proceedings Appendix

None

XI. Certificate of Service

None